

Remarks/Arguments

Prior to this response, claims 1-26 were pending; claims 1-15 and 23-26 were rejected; and claims 16-22 were allowed in the above-referenced Office action.

In this response, claims 1, 2, 4-26 are pending; claims 1, 2, 4, 5, 7-9, 12 and 16 are currently amended; claim 3 is canceled.

All paragraph number references to the specification in the pending application are to paragraph numbers used in US Patent Application Publication No. US 2005/0013941A1 dated January 20, 2005.

Objections to claims 5 and 8 based upon informalities

Claim 5 was objected to for insufficient antecedent basis for the term "the sealing means" in claims 1-3. Claim 5 is amended to remove dependency upon claims 1-3; Applicant submits the amendment overcomes the objection.

Claim 8 was objected to for insufficient antecedent basis for the term "the heated gas" in line 4 of the claim. Claim 8 is amended; Applicant submits the amendment overcomes the objection.

Rejection of claims 2-5 based upon indefiniteness

Claims 2-5 were rejected as being indefinite on the basis that the term "vacuum displacement pump" is vague and indefinite. The specification for the present invention states:

"The coating material is provided from an external source via a suitable pipe or tubing (not shown in the drawings) that is connected to material port 32 of vacuum displacement pump 34. Air port 36 on the pump is connected to a regulated compressed air supply (typically 30 psi for this example) by suitable pipe or tubing (not shown in the drawings).

Regulating the supply of air to a venturi in pump 34 controls the intake draw of coating material into the coating apparatus and provides the means for keeping the coating material within the apparatus under positive air pressure." (currently amended paragraph [0022])

A venturi is known in the art as a short tube with a tapering constriction in the middle that causes an increase in the velocity of flow of a fluid material, such as air in this

application, and a corresponding decrease in fluid pressure. A venturi can be used for creating a suction to draw a material, such as the coating material in this application, into the flow stream of the fluid material. Another common application of a venturi is a carburetor wherein air is used to draw fuel into the flow stream. Applicant submits that claims 2-5, read in the light of the specification as cited above, is sufficiently precise to reasonably apprise those skilled in the art as to the scope of the claims relative to the recited vacuum displacement pump.

Rejection of claims 1, 6-10, 12, 14, 23 and 25 as being obvious over UK Patent Application 2285592 ('592) in view of "Sprays" by Kirk-Othmer

Claims 1, 6-10, 12, 14, 23 and 25 were rejected as being obvious over '592, in view of "Sprays" by Kirk-Othmer. '592 teaches supplying a coating material through an annular body 13, which is a part of support frame 3 (stator), as are location bars 11. This annular body 13 has a number of enlarged supply ports 15 (page 4, lines 23-26). Alternatively disclosed is a singular annular supply port or chamber that is incorporated in the body portion 13 of support frame 3 (page 4, lines 31-34). In this device, coating material in the supply port(s) 15 travels to radial duct(s) 25 in a rotary frame 5 (rotor). The radial duct(s) 25 are connected to spray heads 7 through which coating material is released. Fig. 2 of '592 shows that the path of the coating material passes from the enlarged supply ports 15 in the inner rim of the stator body 13 to facing cavities in the outer rim of the rotor 5. The device of '592 requires the use of annular seals 27 around the body portion 13 of support frame 3 to prevent unwanted release of coating material as rotary frame 5 rotates relative to support frame 3. This is disadvantageous in that any coating material leaking through annular seals 27 will foul the opposing surface regions of the rotary frame 5 and body portion 13 of support frame 3. Since the rotary frame 5 rotates while the support frame 3 remains stationary, this fouling, over time, can interfere with rotation of the rotary frame 5. If seals 27 are not used the fouling problem is aggravated.

Amended claim 1 recites in part "at least one outlet mounted on the stator and projecting into the gallery for injecting the coating material into the at least one gallery" where "the at least one gallery [is] internal to the rotor". Since the outlet projects into the gallery, seal 40, and the space that the seal occupies, in contrast to the interface between

the rotary frame 5 and the support frame 3 of '592, is not in the direct path of the coating material. Consequently, there is far less tendency for coating material to escape past the seal 40 if used, or the space that would be occupied by seal 40, if not used, of the present invention than past the seals 27, or the space occupied by seals 27, of the device disclosed in '592.

The non-obvious improvement of claim 1 over '592 is feeding the coating material directly into a chamber contained in the rotating member (rotor) as opposed to a chamber (supply ports 15 in support frame 3) in the stationary member (stator) as taught by '592.

The Examiner cites "Sprays" by Kirk-Othmer for the teaching of known chemical spray processes, and disclosure of using an air atomizing spray during such processes as spray coating, spray painting, quenching, and spray drying processes. Applicant submits that neither '592 alone, or in combination with "Sprays" by Kirk-Othmer, suggests the apparatus of claim 1, including the recitation of at least one outlet mounted on the stator and projecting into the at least one gallery for injecting the coating material into the at least one gallery, where the at least one gallery is internal to the rotor. Therefore, Applicant submits that claim 1 is not obvious over '592 in view of "Sprays" by Kirk-Othmer.

With respect to claim 6, the Examiner states that "'592 teaches at least one coating diffusing head has a diffusing means within the internal passage of the at least one coating head (Figure 1)." Claim 6 is dependent upon claim 1; for the reasons set forth above regarding claim 1 relative to '592 and "Sprays" by Kirk-Othmer, Applicant submits that claim 6 is not obvious over '592 in view of "Sprays" by Kirk-Othmer.

With respect to claims 7-9, the Examiner states that "'592 teaches a means for applying a grit, gas and/or fluid from an external source to the at least one internal gallery and means for applying positive air pressure to the at least one internal gallery (Page 7, lines 15-21)." Claims 7-9 are dependent upon claim 1; for the reasons set forth above regarding claim 1 relative to '592 and "Sprays" by Kirk-Othmer, Applicant submits that claims 7-9 are not obvious over '592 in view of "Sprays" by Kirk-Othmer.

With respect to claim 10, the Examiner states that "'592 teaches the stator and the

rotor include a means for opening and closing around the pipe, such as two split or hinged members (Page 6, lines 10-14)." Claim 10 is dependent on claim 1; for the reasons set forth above regarding claim 1 relative to '592 and "Sprays" by Kirk-Othmer, Applicant submits that claim 10 is not obvious over '592 in view of "Sprays" by Kirk-Othmer.

With respect to claim 12, the Examiner states that "'592 teaches a method for applying a coating to the exterior surface of a pipe comprising supplying a positive air pressure to the stator, transferring the coating material to the gallery within the rotating element around the pipe and then ejecting the coating material onto the pipe (Figure 1, Page 5-6)." Currently amended claim 12 recites, in part, the step of "transferring the coating material from the stationary element to a gallery within a rotating element gallery disposed substantially within the stationary element via at least one outlet mounted on the stator and projecting into the gallery, the gallery substantially surrounding the pipe", which is not taught by '592 alone or in combination with "Sprays" by Kirk-Othmer. Therefore, Applicant submits that claim 12 is not obvious over '592 in view of "Sprays" by Kirk-Othmer.

With respect to claim 14, the Examiner states "'592 teaches applying a positive air pressure gas onto the surface of the pipe (Page 7, lines 15-21)." Claim 14 is dependent on claim 12; for the reasons set forth above regarding claim 12 relative to '592 and "Sprays" by Kirk-Othmer, Applicant submits that claim 14 is not obvious over '592 in view of "Sprays" by Kirk-Othmer.

With respect to claim 23, the Examiner states that "'592 teaches supplying at a positive air pressure a coating material into an intake chamber (17), a compression chamber (15), a diffusion chamber (25), and then ejecting to the exterior of the pipe (Figures 1 and 2). '592 discloses an intake chamber (i.e. supply pipes 17) that does not suggest "an at least one intake chamber within a substantially annular-shaped body surrounding the pipe" as recited in claim 23 (see also intake chamber 74 in FIG. 7 and FIG. 7 of the present application and paragraph [0036] of the specification). '592 discloses "enlarged supply ports 15" (page 4, line 24), but does not suggest "a

compression chamber substantially surrounding the exterior of the pipe" as recited in claim 23 (see also compression chamber 76 in FIG. 7 and FIG. 7 of the present application and paragraph [0036] of the specification). Claim 23 recites, in part, the steps of "diffusing the coating material exiting the compression chamber in an at least one diffusing chamber substantially surrounding the exterior of the pipe within the body; and ejecting the coating material from the at least one diffusing chamber onto the exterior surface of the pipe." '592 discloses discreet duct(s) 25, and not an at least one diffusing chamber substantially surrounding the exterior of the pipe within the body, and ejecting the coating material from the at least one diffusing chamber onto the exterior surface of the pipe, as recited in claim 23. Applicant submits that claim 23 is not obvious over '592 in view of "Sprays" by Kirk-Othmer.

With respect to claim 25, the Examiner states "'592 teaches applying a positive air pressure gas onto the surface of the pipe (Page 7, lines 15-21)." Claim 25 is dependent upon claim 23; for the reasons set forth above regarding claim 23 relative to '592 and "Sprays" by Kirk-Othmer, Applicant submits that claim 25 is not obvious over '592 in view of "Sprays" by Kirk-Othmer.

Rejection of claims 2-5 as being unpatentable over '592 in view of "Sprays" by Kirk-Othmer, and further in view of "Coating processes" by Kirk-Othmer

With respect to claims 2-3, the Examiner states "it would have been obvious to one skilled in the art at the time of the invention to modify '592 in view of "Sprays" by Kirk-Othmer to use the compressed air and material ports with a pump as suggested by "Coating processes" by Kirk-Othmer to provide a desirable air atomized spray coating because "Coating processes" by Kirk-Othmer discloses providing compressed air and material together in an area near the nozzle is known in the art to provide air atomization of a coating material and therefore would reasonably be expected to effectively provide air atomizing a coating on the exterior of a pipe." Claim 2 is dependent upon claim 1; claim 3 is canceled. As discussed above, Applicant submits that neither '592 alone, or in combination with "Sprays" by Kirk-Othmer, suggests the apparatus of claim 1. The Examiner cites "Coating processes" by Kirk-Othmer for the teaching that "during an air

atomizing process, an external source of compressed air is supplied to atomize the coating material (Page 664). "Coating processes" by Kirk-Othmer discloses providing an external-mix nozzle, where the atomized air and the coating material are mixed in a space before the nozzle (Page 664)." Applicant submits that that '592 in combination with "Sprays" by Kirk-Othmer and "Coating processes" by Kirk-Othmer, does not suggest the apparatus of claim 2, and, therefore, claim 2 is not obvious in view of these references.

With respect to claim 4, the Examiner states " '592 discloses an annular seal extending around the support from to prevent unwanted coating material from escaping (Page 5, line 17). As discussed above, arrangement of the annular seal in '592 is significantly different from the sealing means recited in claim 4, which is dependent upon claim 1 or 2. Applicant submits that that '592 in combination with "Sprays" by Kirk-Othmer and "Coating processes" by Kirk-Othmer, do not suggest the apparatus of claim 4, and, therefore, claim 4 is not obvious in view of these references.

With respect to claim 5, the Examiner states " '592 in view of "Sprays" by Kirk-Othmer, and further in view of "Coating processes" by Kirk-Othmer teaches providing at least one compressed air port to the stator, which provides a positive pressure within the stator and therefore provides a positive air pressure on the sealing means." Claim 5 is dependent upon claim 4; Applicant submits that that '592 in combination with "Sprays" by Kirk-Othmer and "Coating processes" by Kirk-Othmer, do not suggest the apparatus of claim 4, and therefore, claim 4 is not obvious in view of these references.

Rejection of claim 11 as being unpatentable over '592 in view of "Sprays" by Kirk-Othmer, and further in view of US Patent 4595607 by Betteridge et al. ('607)

With respect to claim 11, the Examiner states "it would have been obvious to one skilled in the art at the time of the invention to modify '592 to use the magnetic induction heater suggested by '607 to provide a desirable heating of the pipe prior to coating because '592 teaches induction heating prior to coating the exterior of a pipe and '607 teaches magnetic induction heaters concentrate the heating effects onto the surface to be heated." Claim 11 is dependent upon claim 1, which is discussed above relative to '592 and "Sprays" by Kirk-Othmer. '607 is cited by the Examiner for the teaching of a method for coating pipe weld joints, including magnetic induction heaters to concentrate the

induction heating effects towards the pipe being heated. Applicant submits that '592 in view of "Sprays" by Kirk-Othmer, and further in view of '607, do not suggest the apparatus of amended claim 1, including the recitation of at least one outlet mounted on the stator and projecting into the gallery for injecting the coating material into the at least one gallery. Therefore, Applicant submits that claim 11 is not obvious over '592 in view of "Sprays" by Kirk-Othmer, and further in view of '607.

Rejection of claims 13 and 24 as being unpatentable over '592 in view of "Sprays" by Kirk-Othmer, and further in view of US Patent 5191740 by Rose ('740)

With respect to claims 13 and 24, the Examiner states "it would have been obvious to one of ordinary skill in the art at the time of the invention to modify '592 to use the ejecting of grit to clean the pipe as suggested by '740 to provide a desirable cleaning of a pipe prior to coating because '740 discloses ejecting grit from a nozzle attached to a stator around the circumference of the pipe is known in the art to provide roughening of the pipe resulting in a strong bond between the coating and the pipe and therefore would reasonably be expected to effectively provide effective blast cleaning prior to coating in the process of '592." Claim 13 is dependent upon claim 12, and claim 24 is dependent upon claim 23. Claims 12 and 23 are discussed above relative to '592 and "Sprays" by Kirk-Othmer. '740 is cited by the Examiner for the teaching of a method of blast cleaning the exterior of a pipe, including providing a stator around the exterior of the pipe and nozzles to eject grit to clean the surface. Applicant submits that '592 in view of "Sprays" by Kirk-Othmer, and further in view of '740 do not suggest the methods of claims 13 and 24, and therefore, claims 13 and 24 are not obvious in light of these references.

Rejection of claims 15 and 26 as being unpatentable over '592 in view of "Sprays" by Kirk-Othmer, and further in view of US Patent 5026451 by Trzecieski et al. ('451)

With respect to claims 15 and 26, the Examiner states "it would have been obvious to one skilled in the art at the time of the invention to modify '592 to spray of quenching fluid from the nozzles as suggested by '451 to provide a desirable coating on the exterior surface of the pipe because '592 teaches spraying fluids onto the surface of the pipe through the coating heats [heads] and '451 teaches spraying a quenching fluid onto the exterior of a pipe hardens the coating." Claim 15 is dependent upon claim 12, and claim

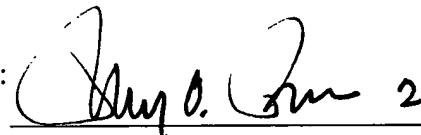
26 is dependent upon claim 23. Claims 12 and 23 are discussed above relative to '592 and "Sprays" by Kirk-Othmer. '451 is cited by the Examiner for the teaching of a method and apparatus for coating pipes and disclosing the spraying a quenching fluid onto the surface of the coated pipe. Applicant submits that '592 in view of "Sprays" by Kirk-Othmer, and further in view of '451 do not suggest the methods of dependent claims 15 and 26, and therefore, claims 15 and 26 are not obvious in light of these references.

Applicant respectfully requests allowance of all pending claims.

Respectfully submitted,

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